Logistics Information Systems: The Need for an Upgraded Information System to Support Marine Aviation Logistics

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Submitted by Captain P.J. Seipel

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Introduction

In 2007 the Deputy Commandant for Aviation signed the new AVPLAN which stated, "The vision of Aviation Logistics in the future is flexible, agile, and reliable support to the ACE with a lighter/smaller logistics footprint and accompanied by a proactive decision-making approaches and tools."[1] In order to support this new vision for aviation logistics, a new set of tools is required. These tools must be integrated, flexible, adaptable, and technologically advanced. They must operate using industry standard commercial off-the-shelf hardware, software, and operating systems. The tools must be designed from the ground-up to support decision making and automation. In order to attain LtGen Castellaw's vision, the Marine Corps aviation logistics community must develop an upgraded and integrated C2 system to support future aviation logistics requirements.

Background Information

The Marine Aviation Logistics Support Program (MALSP) was developed in the 1980's to support Marine Corps aviation during contingency and wartime operations. MALSP consists of six different support packages which allow the deployment of incremental capabilities from 30 to 90 days and provide for

[1] Lieutenant General John Castellaw, (USMC), *The 2007 Marine Corps Aviation Plan (AVPLAN)* (Washington D.C.: Headquarters United States Marine Corps, June 2007), 11-2.

initial organizational level maintenance support all the way up to a full intermediate level maintenance capability.[2]

Over the past several years, Headquarters U. S. Marine Corps Aviation Logistics Department (ASL) has been developing a new MALSP doctrine called MALSP II. This new MALSP II program leverages a concept called AIRSpeed[3], which is a combination of the industry best practices of Lean, Six Sigma, and Theory of Constraints.[4] The use of AIRSpeed[5] transforms MALSP from one-size-fits-all fixed support packages and wasteful maintenance processes, into dynamic, agile, expeditionary support packages which are supported by efficient and fiscally responsible maintenance practices.[6] In order to support the MALSP II program, ASL has embarked on a pilot program for which they have developed several new tools to demonstrate the concept: the Expeditionary Buffer Management Module (EBMM), the Expeditionary

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[2] Department of the Navy, United States Marine Corps, P4400.177D Marine Corps Aviation Supply Desktop Procedures, 7 Mar 2003.

[3] AIRSpeed is a program designed to reduce the cost of doing business and to improve productivity. AIRSpeed addresses process improvement using the concepts of Lean, Six Sigma, and Theory of Constraints. AIRSpeed is based on the following principle: If you reduce cycle time and achieve the same or greater quality, you automatically reduce the cost of doing business and improve productivity. NAVAIR AIRSpeed Frequently Asked Questions. URL:< www.navair.navy.mil/navairairspeed/NAVAIRAirspeed_FAQ.cfm>, accessed 17 February 2008.

[4] Castellaw, 11-3

[5] Applying AIRSpeed to logistics requires detailed tracking of the demand pattern, delivery cycle time, and time to reliably replenish each part in the warehouse. In addition to tracking the information, the data must be condensed and translated into a format that the supply and maintenance officer can use to focus their efforts to improve the cycle time and remove constraints.

[6] Headquarters U. S. Marine Corps ASL. “The Marine Aviation Logistics Support Program II (MALSP II) Concept of Operations”. Headquarters Marine Corps, 8 May 2006.

Buffer Sizing Tool (EBST)[7], and the Expeditionary Packup Kit (EPUK).[8] These tools have been successful as an interim solution, but they are not integrated, do not have long term support, and do not have "program of record" status.

Current Situation

The current information systems that support Marine Corps aviation logistics fall under the Naval Tactical Command Support System II (NTCSS II), and include the Naval Aviation Logistics Command Management Information System (NALCOMIS) to track and document intermediate-level maintenance, the Relational Supply System (R-Supply) to provide retail-level supply functionality to include inventory and financial management, and the Optimized Organizational Level Maintenance Activity System (OOMA) to track and schedule organizational-level maintenance. The NTCSS program began in 1995 and was declared fully operational in 2000 with the exception of OOMA which received fielding approval in 2006.[9] The systems that comprise NTCSS have been around in one form or another since the early 1980's when the Shipboard Non-tactical ADP Program (SNAP) began with the Honeywell DPS-6

[7] Headquarters U. S. Marine Corps ASL. 8 May 2006.
[8] Castellaw, 11-3
[9] United States General Accounting Office, DOD SYSTEMS MODERNIZATION: Planned Investment in the Naval Tactical Command Support System Needs to Be Reassessed, December 2005. 9.

mainframe.[10] These systems have evolved over the years as the SNAP I program transitioned to SNAP II and then to NTCSS; however, the same shortcomings have always been present: antiquated and proprietary hardware, software, and operating systems; non-integrated software; and the systems have been designed as data storage systems[11], instead of management / decision-making systems.[12] The NTCSS system performs the functions of tracking maintenance, inventory status, and financial data very well. It does not, however, provide the maintenance or supply officer with the right tools to transform the data into meaningful information to support the decision-making process. As a result, these officers resort to using spreadsheets, access databases, and pencil/paper in order to calculate supply requirements and develop maintenance schedules. NTCSS fails to automate processes that do not require a decision to be made by the user, and it does not assist the user in optimizing maintenance schedules or supply chain nodes. For example, if squadron A and squadron B both have an aircraft down for a radar and the supply department only has one radar on the shelf, which squadron should get the radar? NTCSS has all of

[10] United States General Accounting Office, ADP PROCUREMENT: Prompt Navy Action Can Reduce Risks to SNAP III Implementation, September 1992. 2
[11] United States General Accounting Office, "DOD SYSTEMS MODERNIZATION," 2-11.
[12] The author defines a management/decision-making system as "a system which not only tracks and collects data, but one which also synthesizes and translates that data into meaningful information which supports the decision-making process."

the data necessary to know that squadron A's aircraft only needs the radar to be mission ready and squadron B's aircraft needs several other parts that are not on hand besides the radar. Not only does NTCSS not automatically make the decision to issue the radar to squadron A, it doesn't alert the supply officer and present the information to assist him in making the decision. In addition, myriad other supporting applications such as EBMM, EBST, Stand-Alone Material Management System (SAMMS), EPUK, and the integrated barcode scanner system (IBS) were developed or home-grown over the years to fill gaps and provide capabilities that were not covered by NTCSS. These systems also extract data that the maintenance and supply officers can use to make decisions and optimize their processes. These systems are not integrated, require significant manual intervention to move data between their system and NTCSS, and lack "program of record" status or funding support. The continued funding of these systems is uncertain and the Marines' ability to receive technical support or to have changes made to improve the systems is questionable. In addition, because the systems are not integrated, any changes to or problems with one system can cause problems within the other systems as data fails to interface or becomes corrupted.

Proposed Solution

AIRSpeed places tremendous requirements on the aviation information systems that support the Marine Aviation Logistics Squadron. In order to serve as an effective decision-making tool, instead of just a data storage tool, the information system must be highly integrated, possess top-notch technology and processing power, and must be autonomic to the extent that user intervention is only required in special cases.

Integrated

The number one requirement for an effective logistics information system is that it must be integrated. Data formats must be standardized, and data must be shared easily between the different modules of the system. Communication capabilities are often a limitation to integrating current systems. During Desert Storm, one of the many lessons learned regarding logistics systems was the "lack of communication and interfaces between multiple logistics IT systems."[13] The logistics information system of the future cannot allow communications to be an impediment. The system must take advantage of all communications vehicles to include LAN and SATCOM. Unlike NTCSS, the new system should absolutely be integrated across the Marine Corps aviation enterprise. If Marine Aviation Logistics Squadron (MALS) 36 has a requirement for a part which is

[13] Murielle Delaporte and Robin Laird, "Modernising Logistics in the Crucible of War," Military Logistics International 3, no.2 (2007): 22.

unavailable in the Naval Supply System, and MALS-26 has that part sitting un-used in its warehouse, the system should direct the transfer of that part.

State of the art technology is not necessary for an effective logistics information system, but the technology must be consistent with current industry standards. NTCSS uses the TAC-4 system, which was at the end of its life cycle in 2001 and which consists of proprietary hardware, software, and operating system.[14] The logistics information system for the next decade must be built using off-the-shelf hardware and software from industry recognized manufacturers like Dell and Microsoft so that it will have manufacturer support during its life cycle and so that it will be easily upgradeable in the future.

Flexible/Scalable

The system absolutely has to be flexible and scalable. The Marine Corps cannot afford to adopt a one-size-fits-all mentality when it comes to a logistics information system. The system should be built around a core set of capabilities, and the rest of the system capabilities should be modular, able to be added or removed as necessary. If the core capabilities, such as financial management and inventory tracking are centralized either physically in one location or virtually

[14] Brandenburg, Craig. "U. S. Navy COTS: A Double-Edged Sword," <http://www.dtic.mil/ndia/2001systems/brandenburg3.pdf> (17 December 2007).

through the use of linked servers, then the system must become more modular and flexible to support contingencies and/or different units. By deploying only the capabilities necessary to support a particular contingency, the Marine Corps can avoid deploying accountants and inventory tracking personnel to combat zones.

Automated

Automation is the final key component to developing a logistics information system for Marine Corps Aviation. By automating most of the day-to-day processes performed in the system, more effort can be directed to those processes which require decisions to be made by a Marine. For example, barcodes should be used on all components and used to automate the entry of data. The less data that has to be entered manually by a Marine, the less the chance for error. Supply parts should be tracked throughout their movement from the time they are received, stocked, ordered, issued, and inducted into the IMA in order to prevent expensive parts from being lost or damaged. Maintenance decision-making processes need to be automated, with a focus on optimizing the maintenance schedule in order to support the current flight schedule, while also preparing for the next days or week's flight schedule. The training process for pilot qualifications can also be integrated into the system so that maintenance can be scheduled around the training

requirements in order to optimize the number of training hours avialable.

Counterargument

The argument could be made that the existing command and control information systems are adequate to support Marine Corps aviation into the next decade, however, that argument is absolutely not correct. Existing information systems do not store the necessary data, nor do they possess the processing power required to perform the complex calculations that are required to predict accurate logistics requirements for expeditionary units. In addition, the current systems are not flexible enough to support the MALSP II deployment doctrine, nor are they designed to serve as decision-support tools. NTCSS is a data storage system, and any attempt to use it as a decision-making tool will continue to require needless investment in stove-piped applications like EBMM, EBST, and EPUK in an attempt to make up for the capabilities that NTCSS lacks.

Conclusion

The current aviation logistics information systems do not support the MALSP II deployment doctrine. They are antiquated, non-integrated, and inflexible. Current information systems do not provide the decision-making capability necessary to provide the proper level of support to warfighters and take Marine Corps aviation into the future. The Marine Corps aviation logistics

community must develop an upgraded and integrated C2 system to support aviation logistics requirements. Failure to upgrade to a technologically superior, integrated C2 system will leave Marine Corps Aviation unprepared for the next contingency and will result in poor readiness and an inability to support the warfighter in future conflicts.

1979 words

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